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Taxation, Labor Market Policy and High-Impact Entrepreneurship

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Abstract: Public policy affects the prevalence and performance of both productive and high-impact entrepreneurship. High-impact entrepreneurship prospers when knowledge is successfully generated and exploited in the economy. This process depends on complementary key actors who use their competencies in what we denote a competence bloc. Although variations in economic contexts make prescribing a general panacea impossible, a number of relevant policy areas that affect key actors can be identified. In this paper this is done in the areas of tax policy and labor market policy. It is shown that high and/or distortive taxes and heavy labor market regulations impinge on the creation and functioning of competence blocs, thereby reducing high-impact entrepreneurship.

Keywords: Entrepreneurship; Gazelles; High-growth firms; High-impact entrepreneurship Innovation; Institutions; Labor market policy; Tax policy.

JEL Codes: H32; L5; L25; M13; O31; P14.

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1 Introduction

Enterprises exhibit great differences in age, size, industry affiliation, growth ambitions and growth performance. It is well documented that young and small firms contribute disproportionately to net employment and productivity growth.[1] Meanwhile, most firms grow very slowly, or not at all. Zook and Allen (1999) report that only one in seven companies achieves sustained growth while remaining profitable. Accordingly, some observers point to a small number of rapidly growing firms that contribute a disproportionately large share of net job creation and economic growth (see, e.g., Birch and Medoff 1994; Storey 1994; Schreyer 2000; Acs et al. 2008; and the survey by Henrekson and Johansson 2010).

The fact that a small share of all firms plays such a disproportionate role in the economy motivates our emphasis on what Zoltan Acs (2008) has named high-impact entrepreneurship (HIE). Entrepreneurial firms with an exceptional growth trajectory are sometimes termed high-growth firms (HGFs) or "gazelles" as well. (We will use the terms HIE and HGF interchangeably throughout the article.) High-impact entrepreneurial activities commercialize key innovations or create disruptive breakthroughs, extract substantial entrepreneurial rents, spur growth (in both the firm and the economy) and employment, and shift the production possibility frontier outwards. In short, HIE significantly influences the economy. Yet a typical start-up is not characterized by HIE, and HIE is not necessarily performed within new (or small) companies.[2]

Policy discussions should take note of these facts. Rather than targeting small firms to compensate for their inherent disadvantages—a motivation for many policies in the recent past—focus should be directed towards providing a framework for fostering a dynamic economy conducive to HIE. What bundle of policies ensures that people can start new ventures, develop these ventures into high-impact firms, and expand existing ventures to their full potential?[3]

The journal article format does not permit an exhaustive treatment of all pertinent policies. Instead we will focus on two policy areas of crucial importance, namely tax policy and policies pertaining to the functioning of labor markets. Other areas, such as private property rights,

[1] For a survey of the empirical evidence, see van Praag and Versloot (2008).

[2] See Acs (2008) for an in-depth discussion of HIE. Acs claims that HIE should be an activity focused on (homogeneous) mass production within the product market sector. However, we find it unnecessary to restrict the concept of HIE to specific business activities and/or strategies.

[3] This does not preclude the prospect of an entrepreneurial venture being sold to an incumbent fairly quickly. The full potential of a business idea will more likely be realized if it is sold to an established business with the requisite know-how and financial strength (Norbäck and Persson 2009).

the functioning of financial markets and the regulation of product markets, are important but will not be dealt with here.

Yet the entrepreneur is not the only agent that is of consequence for economic progress. Successful entrepreneurs who identify and exploit new ideas—thereby creating and expanding businesses—depend on a number of complementary agents, such as skilled labor, industrialists, venture capitalists and secondary markets. One should keep in mind that HIE becomes impossible without these complementary competencies and inputs. Focusing solely on entrepreneurship abstracts from other factors necessary for an economy to prosper. Still, entrepreneurship is crucial; a lack of entrepreneurs cannot be fully offset by an ample supply of skilled labor or an extensive capital market.

2 Competence blocs and high-impact entrepreneurship

Economic growth is a complex process involving the creation and use of knowledge. We draw on the theory of competence blocs (Eliasson and Eliasson 1996) to identify key actors with different but complementary competencies that interact to generate, identify, select, expand and exploit new ideas about how to satisfy consumer preferences more efficiently.[4] This theory identifies at least seven types of actors crucial to generating long-run economic growth:

i) *Entrepreneurs* identify new ideas and introduce those with expected profitability into the market. An entrepreneur will pursue those entrepreneurial activities that are thought to generate the largest private return. A highly profitable venture for the individual entrepreneur may, however, have a zero or negative social rate of return. Productive entrepreneurs perform entrepreneurial activities in which the social outcome is positive and based on wealth generation (Baumol 1990). These entrepreneurs may be characterized as agents of change (cf. Schumpeter 1934) and fulfill a fundamental coordinating and judgmental function. [5]

ii) *Inventors* solve specific technical, organizational or economic problems. Inventors have detailed knowledge about production processes, product specifications and so forth that entrepreneurs may lack. Their work provides the basis for subsequent activity by entre-

[4] See Johansson (2010) for an introduction. The idea of the importance of complementary competencies to generate growth is recognized by a number of research scholars. See, for instance, Phelps (2007, p. 553) for a discussion in conformity with our analysis.

[5] For an extensive discussion of the concept of entrepreneurship, see Peneder (2009).

preneurs who have a common understanding of the business idea and commercialization process.

iii) *Industrialists* organize the commercialization of the original ideas into a large-scale business after the introductory entrepreneurial phase. The introduction of new ideas into the economy and the subsequent development of the original innovations into large-scale businesses generally require two separate competencies (Flamholtz 1986; Baumol 2004). Sometimes the original entrepreneur evolves into an industrialist and continues to head his/her firm as it becomes larger, but more often than not, the entrepreneur will cede the top executive position to somebody with the requisite experience and competence to manage a large firm. The industrialist may also be a competitor to the entrepreneur who introduced the original innovation.

iv) *Skilled labor*. Economic development and growth requires labor with relevant professional skills. Rapidly expanding industries are often hampered by a lack of individuals with specific skills.

v) *Venture capitalists* supply equity capital to enterprises in the early phases of business ventures.[6] They also identify entrepreneurs and projects, assess the value of potential investments, supervise management and evaluate investments. In the case of sustained mismanagement of a company, or if it can be more skillfully managed by somebody else, venture capitalists can enforce change and appoint new management better equipped to lead the company. In addition to providing capital, venture capitalists supply management skills, industry-specific knowledge and access to business networks. Many entrepreneurial firms are too small for venture capital funding. Yet venture capital retains importance for high-performing and high-growth entrepreneurial firms.[7]

vi) *Actors in secondary (exit) markets* have similar competencies and carry out similar functions as venture capitalists, but do so at a later stage when entrepreneurs and venture capitalists want to exit from their investments. There are several types of actors in secondary markets, most notably portfolio investors in publicly listed companies**,** private equity (PE) firms, and management buy-ins.[8]

[6] So-called business angels carry out a similar function as venture capitalists, generally in earlier phases. Business angels are not explicitly mentioned in the original definition of the competence bloc.

[7] OECD (1998). Gompers and Lerner (2001) provide a comprehensive analysis of the importance of venture capital for innovation and firm growth. Kedrosky (2009) shows that approximately 16 percent of the fastest-growing private companies on the Inc. 500 list in the United States had VC backing.

[8] See Wright (2007) for an overview of the different categories, and Prowse (1998) and Norbäck et al (2010) for analyses of the function of the private equity market.

vii) *Competent customers* provide the entrepreneur with information about consumer preferences. The ability to discern these preferences, so that highly-valued goods and services are produced, is a key ingredient in successful entrepreneurship. A competent customer can be an individual or a firm. Cooperation with one or several large firms that dominate an industry provides knowledge about a considerable share of the market. Large enterprises rich in capital can also function as competent venture capitalists and finance the development of particular products.[9]

The categories of actors can differ in a number of respects. For example, the competence of an industrialist may be restricted to a particular industry or to firms of a certain size. In addition, one individual can carry out more than one function, such as acting as both an entrepreneur and an industrialist.[10]

Commercialization of innovations reveals large variations in economic performance. There are good reasons to expect this state of affairs; economic potential differs across innovations, firms and innovations are in different phases of development, and competence blocs themselves are in different phases of development. Consequently, rapid growth necessitates large flows of workers and other factors of production across firms due to experimentation in the face of uncertain market prospects, cost structures, managerial abilities and technologies (Jovanovic 1982).[11]

Figure 1 summarizes the competence bloc and the role of key actors in the process of fostering HGFs. Some actors may be important in several phases, and a certain individual can fulfill several functions either simultaneously or at different points in the individual's or firm's life cycle. Even though most HGFs do not display sustained growth but rather follow a more complex pattern (Parker et al. 2010), the development of rapidly growing firms may be depicted in a stylized form as an S-curve.

The figure shows at which stage of a firm's growth different actors play a key role. The order in which the categories appear beneath the boxes indicates the actor with the main coordinating responsibility. This is not a definite ranking; it differs across enterprises and sectors

[9] An important case in point is large firms that finance small firms developing new products that are then commercialized by large firms. See, e.g., Lerner and Merges (1998), and Audretsch and Feldman (2003).
[10] The original definition included the category "innovators" whose function was an extension of that of inventors. In short, they bridged the gap between inventors and entrepreneurs. This implies a more administrative role in practice, managing the integration of inventions and technologies into well-functioning worthwhile products. The definition differs from Schumpeter (1934), who uses "innovator" and "entrepreneur" synonymously. We have noticed that this confuses many readers and have therefore decided to leave out "innovators" from the analysis. Their function will be partially subsumed under the categories skilled labor and entrepreneurs.
[11] Eighty percent or more of the reallocation of workers takes place within narrowly defined sectors of the economy in developed countries. See Caballero (2007, p. 19 ff) for an overview of the evidence.

in practice, but it still shows a stylized depiction of the typical situation. In the first phase (the development of novel business ideas), entrepreneurs identify potential business opportunities together with competent customers, while inventors are engaged to solve specific problems. The first phase of commercialization (introduction and early growth of firms) involves entrepreneurs; skilled workers are only involved to a small extent. Industrialists are active in the phase of industrialization and rapid growth, which also requires a great deal of skilled labor. Venture capitalists are important financiers in the earlier phases, although this role is taken over by actors in secondary markets in later phases when the firm is larger. Competent customers are typically involved in all phases and ultimately determine the demand for the good.

Figure 1 about here

To sum up, rapid economic growth and employment creation occur if individual actors form competitive competence blocs and establish new firms with high growth potential and aspirations. This requires appropriate institutions that *harmonize* the incentives of the different types of actors with complementary competencies (Pelikan 1993; Henrekson and Johansson 2009). In the next two sections we will focus our analysis on two highly important policy areas and describe how HIE and potential HGFs are affected by tax policy and policies governing the labor market.

3 Tax policy and high-impact entrepreneurship

Working within the theory of competence blocs, we have identified seven distinct categories of actors crucial for HIE and HGFs. However, the tax code does not acknowledge these categories; there is no specific tax on income from entrepreneurial effort, inventive activity or the return on acquired skills. Based on provisions in the tax code, individual (personal) income is classified as labor income, business income or capital income instead, and within each of these categories there may be further provisions that influence the effective tax rate. Income from labor and income from business are normally added up and called earned income. Besides these categories, the tax system normally includes corporate taxation, tax on asset holdings and different forms of indirect taxation such as pay-roll taxes and sales taxes/VAT. The incentive effects of the tax system are potentially large, highly complex and difficult to assess with precision.

Table 1 about here

In *Table 1* we outline different kinds of taxation and list the most important aspects of each category. We will discuss each type of tax in turn to examine how incentives for the different categories of actors in the competence bloc are affected. To avoid excessive fragmentation of the text, taxes with similar effects will be discussed together. However, the taxation of stock options, which is formally not a distinct tax category, will be discussed separately. The total tax effect of stock options may depend on more than one of the other tax categories and it deserves specific attention. The total effect on key competencies, including risk-taking behavior, is determined by the combined effect of the different taxes. We end this section by summarizing the total effect of all different taxes and how this may affect key competencies.

3.1 Taxation of earned income and pay-roll taxes

The level and progressivity of labor taxation (including mandatory social security contributions) always affect employees directly by determining the incentives for work effort, labor supply (on the extensive and intensive margin), occupational choice, career aspirations, and the propensity to upgrade and learn new skills. High and progressive labor taxes lower the rate of return on productive skills, and are therefore likely to impair the supply of skilled workers. They also slow restructuring and the reallocation of people across firms, as it becomes more costly to obtain the net wage differential necessary to induce a person to quit their current employment position.

When inventors are taxed as wage-earners or self-employed, their incentives are also affected by the tax code for earned income. The same is true for industrialists, unless they have a large ownership share in the firm they manage, which is usually not the case for large firms.

Taxing income from entrepreneurship as earned income also affects the entrepreneur's incentives. High taxes on earned income tend to encourage self-employment because the self-employed can avoid reporting some of their income, convert part of their private consumption expenditures into tax-deductible business costs, and shift more highly taxed earned income to corporate or capital income taxed at a lower rate (Feldstein and Slemrod 1980). These mechanisms may affect who becomes self-employed (cf. Murphy et al. 1991), but HIE has little in common with people who start their own ventures simply to avoid paying higher taxes. Rather, taxing income from entrepreneurship as earned income probably reduces opportunities for legitimate and productive entrepreneurship. The possibility for a small company to avoid paying high taxes may also discourage growth beyond a certain threshold, at which point it becomes more difficult to exploit these tax-avoidance strategies.

In other words, high taxation on earned income may induce people to become self-employed, but it could also weaken their incentives to develop HGFs. But this conclusion is still too simplistic. As noted earlier, entrepreneurial income can appear in many other forms from a tax perspective, including dividends, capital gains on equity and/or gains on stock options, and interest income on lending by the entrepreneur to her/his own business. Given the complexity of the tax code in a typical OECD country, the incentive effects of taxes on earned income for entrepreneurs are quite multifaceted. However, a great deal of the entrepreneurial function is carried out by employees without an ownership stake in the firm who are always subject to the earned income tax schedule. For these categories, a high tax on earned income has negative incentive effects.

Much empirical work has been done that analyzes the relationship between income taxes and entrepreneurship (see Bruce and Schuetze 2004 for an overview). However, most of these studies examine the level of self-employment, which is a rather crude proxy for entrepreneurship and a poor proxy for HIE and HGF. From our point of view, the most relevant studies are those carried out by Carroll et al. (2000, 2001), who analyze the U.S. tax reform in 1986 and find that higher marginal income taxes impair business growth, capital investment and the probability of hiring labor.

The level and progressivity of earned income taxation also indirectly affect the industry structure from the demand side. A large percentage of all work, most notably household work, is performed outside the market. Cross-country comparisons of industry-level employment also point to considerable scope for substitution of certain economic activities between the market and non-market sectors (Rogerson 2006; Freeman and Schettkat 2005).

High rates of personal income taxation (earned income) tend to make it more profitable to shift a large share of service production to the informal economy, in particular into the "do-it-yourself" sector.[12] As a result, the emergence of a large, efficient service sector competing successfully with unpaid work is less likely in countries with high rates of personal income taxation. Consequently, important opportunities for commercial exploitation and entrepreneurial business development become less accessible. When services are provided by professionals, incentives emerge to invest in new knowledge, develop more effective tools, devise superior contractual arrangements, and create more flexible organizational structures.

Thus, the tax burden on earned income steers consumer demand towards sophisticated material goods and low-priced goods that complement one's own time. In countries where the

[12] See Dew-Becker and Gordon (2008), Rogerson (2006) and Davis and Henrekson (2005) for assessments of these effects across OECD-countries.

taxation of earned income is high, competent customers are therefore more likely to be either firms or public entities that buy intermediate goods or individuals who demand goods that are difficult to produce in the household or in the underground economy.[13]

Payroll taxes are normally included in discussions of labor taxation. High payroll taxes deter entrepreneurs from hiring (skilled) employees if wage costs are too high (if the incidence of the payroll tax is on the employer/entrepreneur) or the net wage too low (if the incidence of the payroll tax is on the employee), or a combination of these two effects (if part of the incidence is on the employer and part on the employee). High payroll taxes could also discourage development within the service sector in the same way as the earned income tax, as discussed above.

3.2 Taxation of capital income

The taxation of capital income differs by country and over time, leading to tax systems riddled with variations. To begin with, earned income and capital income can be taxed according to the same tax schedule, or be taxed separately with different tax schedules. If the two types of income are taxed together with a progressive income tax, very high taxes on capital income may occur as a result. The same is true if the tax rate is applied to nominal returns rather than real returns. If the incomes are taxed separately with a lower capital income tax rate, the tax code may restrict capital gains and dividend payments to the owners of closely held firms in order to prevent active owners from converting high taxed labor income into low taxed capital income.

The taxation of capital income especially influences the incentives for entrepreneurs and actors in secondary markets. A high tax rate on dividends encourages entrepreneurs to rely on retained earnings to finance expansion. This punishes new ventures, locks in retained earnings, and traps capital in incumbent firms. What's more, taxing dividends at a high rate favors projects in incumbent ventures, shrinking the flow of capital to the most promising projects and diminishing possibilities of finding and financing new HGFs. If dividends from closely held companies are taxed harder than other capital incomes as a way to reduce the tax avoidance behavior discussed above, entrepreneurship will be discouraged even further. Other tax systems may, however, treat categories of capital incomes differently. They may tax dividends at a lower rate than interest income reflecting the fact that dividends, in contrast to interest payments, are not tax-deductible business costs for the firm and hence have already

[13] For empirical evidence, see, e.g., Davis and Henrekson (2005) and Freeman and Schettkat (2005).

been taxed at the corporate level. This makes the tax system more neutral between different owner categories.

Most of the economic return from the successful formation of an HGF or HIE comes, however, in the form of a steeply increased market value of its stock rather than as dividends or large interest payments to the owners (Spulber 2009). As a result, the taxation of capital gains on stock holdings probably has a larger effect on the incentive to create wealth through the fostering of HGFs and HIE. A tax system with zero or very low tax rates on capital gains on long-term holdings of equity provides strong incentives for entrepreneurs to create value by investing money and effort in their own business, and to give other key actors (industrialists and business angels) ownership stakes in the firm if their competencies are required. On the other hand, a tax system that puts restrictions on capital gains in order to prevent owners of profitable small businesses from paying less tax relative to how much they would pay as regular employees, penalizes owners of stock in closely held firms relative to owners of stock in listed firms. This discourages entrepreneurial initiatives and other key actors.

High capital gains taxation also locks in capital, making key agents less willing to realize capital gains (Auten and Cordes 1991; Daunfeldt et al. 2010). Experiments have shown that taxing capital gains at a high rate may prevent investors from undertaking new investments (Meade 1990), thereby impairing HIE and HGFs. In attempting to free up capital, high capital gains taxation may also lead to excess debt financing, which increases risk and the overall vulnerability of the economy. As many potential HIE projects fail, increased debt financing also increases the likelihood that the failures' negative repercussions will spread throughout the economy. Hence, the tax system may encourage debt financing and excess leverage in the economy, increasing systemic risk and making the country more vulnerable to crisis.[14]

Moreover, the capital gains tax may differ across different types of owners, as some, such as institutional investors and offshore trust funds, are taxed at lower rates than individuals. This is likely to spur an endogenous response in the ownership structure of the business sector towards the tax-favored owner categories. If individual stock holdings are disfavored relative to institutional holdings and institutions are less willing to invest in small and new entrepreneurial projects, HIE and HGFs will be hampered.[15]

[14] See, e.g., IMF (2009), discussing the so-called "debt bias" caused by the current tax systems and how this may have contributed to, though not triggered, the current crisis. Berger and Udell (2003) also claim that equity financing is preferred in cases where significant moral hazard may be present, such as in HGF and high-risk (new) firms.

[15] See, e.g., Rydqvist et al. (2009), who show how the tax system endogenously induces changes in the ownership structure favoring institutional ownership. For a case study discussing the evolution in the UK, see Bank and Cheffins (2008).

The tax system may also provide forceful incentives regarding the level and channeling of savings. Tax systems may differ as to whether deduction of interest payments is permitted (in real or nominal terms), and savings in the form of life insurance are often tax favored relative to other forms of savings. Insurance premiums may be tax deductible against current wage income, and the yield may not be subject to taxation until it is paid out. Normally, pension savings can neither be bought back by the policy holder nor become available until a greater age. Returns on savings in mutual funds may also be taxed differently than savings in individual securities, especially with regard to capital gains taxation. In this form of taxation, a change in the asset composition made by the investment fund has no tax consequences, while the same changes in the case of direct asset holdings could result in the payment of capital gains tax.

A tax system that encourages reliance on savings schemes that escape capital taxation, as discussed above, typically restricts the owner's control of the assets. In this way, the tax treatment of financial assets and property encourages the accumulation of illiquid assets controlled by large financial institutions rather than assets under the direct control of the owner. Such personal financial assets cannot be used by the asset holder as working capital in an existing or new owner-operated business. This particularly affects entrepreneurs and venture capitalists and, hence, the generation and early growth of HGFs and HIE.

3.3 Corporate taxation and risk-taking

A high tax rate on business profits discourages equity financing and spurs debt financing. When debt financing is less costly and more readily available for larger firms, high corporate tax rates coupled with tax-deductible interest payments put smaller firms and potential HGFs at a disadvantage. Taxing corporate profits also reduces the amount of retained earnings that can be used to expand an existing venture. Moreover, taxing profits in small firms often leads to lower growth rates (Michaelas et al. 1999). Hence, it is plausible that high corporate taxes hamper the prevalence of HGFs and HIE. As discussed above, a tax system that favors debt financing will also increase the vulnerability of the economy.

Statutory and effective corporate income tax rates diverge greatly due to tax-reducing depreciation rules, inventory valuation rules, and other more *ad hoc* tax reductions specific to either country or industry. Lowering the effective tax rate may foster unproductive tax evasion or avoidance behavior among firms, distracting entrepreneurial activity from more productive uses and dampening potential HGFs and HIE in the economy.

But the level of the corporate income tax may not be the only thing that matters—the

symmetry involved in the taxation of business profits and losses may also affect the level of risk-taking, thereby influencing entrepreneurial activity and HIE and HGFs as well. It has been argued that governments can provide insurance for business owners by taking (i.e., taxing) part of their profits in good times to offset losses in bad times (Domar and Musgrave 1944, Kaplow 1994). Such insurance could encourage the kind of risk-taking that is central to all entrepreneurial activity, not least HGFs and HIEs.

Yet a number of arguments have been leveled against this proposition. For instance, if the income tax rate is *progressive* and taxes successful projects at a relatively higher rate, and if the tax system does not offer full loss offset, the tax system may punish entrepreneurial risk-taking. It has been shown empirically that a progressive tax system deters entrepreneurship (Gentry and Hubbard 2000).[16]

Gordon (1998) and Cullen and Gordon (2007) extensively analyze how the tax system may influence entrepreneurial risk-taking behavior, taking into consideration all these effects. The progression, the level and the difference between the personal and corporate income tax system all interact, often making the total effect ambiguous. Gordon (1998) concludes that the corporate income tax should be low relative the personal income tax to encourage new entrants. In order to favor new high-risk entrepreneurial firms as opposed to new firms in general, the corporate tax rate should decline with income and stay below the personal income tax rate for high incomes. Cullen and Gordon (2007) maintain that a cut in the personal income tax *can* reduce entrepreneurial risk-taking as it reduces the value of potentially deductible business losses. A cut in the corporate income tax rate may, on the other hand, stimulate business activity, though not necessarily risk taking overall.

However, it could very well be the case that taxation works as a misdirected form of insurance that only encourages new business ventures among those who are not entrepreneurs (de Meza 2002). It is also crucial to distinguish between the quality and quantity of entrepreneurship. Although higher taxes can theoretically stimulate entrepreneurship under some circumstances—empirical support for this conclusion can be found—these results normally only refer to the quantity of entrepreneurship. However, HGF and HIE are not mainly about quantity but about quality. A progressive tax system reduces the option value of pursuing better projects for an entrepreneur. This may spur the number of startups based on lower value business ideas, and hence increase the number of entrepreneurs but decrease the quality of entrepreneurship (Asoni and Sanandaji 2009). Hence, even if higher tax rates spur some types of

[16] These results are not unambiguous, see, e.g., Yuengert (1995).

entrepreneurship, higher taxes are likely to be negative for HGF and HIE.

3.4 Taxation of assets holdings

Several types of taxes levied on asset holdings decouple the tax payment from the return. This holds true for taxes on wealth, property and inheritance. When these taxes are non-zero, rules detailing how taxable wealth is assessed in the business sector become especially important in our context. Successful entrepreneurs, venture capitalists and actors in secondary markets have been shown to be highly sensitive to these kinds of taxes.[17]

Wealth tax based on corporate wealth and equity holdings stifles risk-taking in the economy. Normally, income taxes are only levied on positive incomes; because losses are deductible, income taxes can function as a form of risk-sharing, at least in theory. However, this effect does not materialize when wealth is taxed. Net wealth taxation occurs independently of revenue and profit, while HGFs often demand large investments from key actors. Even if these HGFs suffer large initial losses, the key actors must pay wealth tax on the firm value (which could still be high due to potential future profits). A wealth tax raises the downside risk in investments, doubtlessly reducing willingness to participate in risky HGF projects.[18]

A wealth tax also discourages potential entrepreneurs from accumulating wealth. This poses a problem, as private wealth is often needed to start up and expand a new business; key actors and banks are usually reluctant to supply capital because of asymmetric information, for example Holtz-Eakin et al. (1994). Wealth tax could also induce capital flight, which worsens prospects of finding available capital even more. Abolishing wealth taxes together with wealth tax amnesty could lead to capital repatriation, making more capital available for HGFs and HIE.

A wealth tax also stimulates unproductive and destructive entrepreneurship in the form of tax evasion behavior. A wealth tax is normally very complex and includes many anomalies and exceptions, making the potential gains from tax avoidance high.

Exempting corporate wealth and equity holdings from wealth taxation would spur investment in entrepreneurial ventures by key actors. Alternatively, corporate wealth could be taxed heavily, while other assets such as pension savings or works of art are exempted. If financial assets are subject to wealth tax, pension savings are usually spared. This may encourage the accumulation of illiquid assets controlled by large financial institutions, which would in turn hamper HIE, as discussed above.

[17] See Rosen (2005) for an overview.
[18] See, e.g., the discussion in Schnellenbach (2007).

3.5 Sales taxes/VAT

The incidence of commodity taxation generally falls on final domestic consumers, while intermediate goods and exports are exempted. Hence, the effects of these taxes on the actors of the competence blocs are similar to the effects of income taxation concerning the emergence of new markets, in particular the service sector. For instance, Piggott and Whalley (2001) find that Canada's 1990 switch from a sales tax on manufactured goods, which offers little scope for production outside the legal market sector, to a broad-based consumption tax affected the composition of consumption expenditures by inducing a large substitution away from the legal market provision of food preparation and dining services. Likewise, Spiro (1993) reports a sizeable increase in underground activity following this tax switch.

In some countries, certain commodities such as personal services and merit goods are exempted or taxed at lower rates, while some goods (alcohol, energy, etc.) are taxed more heavily. Generally, there are considerable differences in sales/VAT taxation across countries and commodity groups.

3.6 Taxation of stock options

Stock options can be used to encourage and reward individuals who supply key competencies to a firm. As mentioned above, income from stock options is not defined by its own tax rate. Despite the complicated taxation process, income from stock options will in the end be taxed as either earned income or capital income at the personal level. Still, the tax code surrounding stock options deserves specific attention because of its great impact on HIE and HGFs. In ideal circumstances, stock options provide incentives that closely mimic direct ownership. Employed inventors, entrepreneurs and industrialists benefit most from such a scheme, especially when stock options are used to alleviate agency problems.

The efficiency of stock options depends greatly on the tax code. If gains on stock options are taxed as earned income when they are tied to employment in the firm, some of the incentive effect is lost. This is particularly true if the gains are subject to (uncapped) social security contributions and if the marginal income tax rate is high.

The situation changes dramatically if an employee who accepts stock options can defer the tax liability to the time when the options or the stocks received are eventually sold. The effectiveness is further reinforced if there are no tax consequences for the employee upon the granting or exercise of the option, and if the employee is taxed at a low capital gains rate when the stock acquired through the exercise of the option is sold. In the latter case, the tax

risk of the options is pushed back to the government. This accomplishes two things: it increases the potential profit from the stock options and it allows budget-constrained individuals to sell stocks whenever they choose to do so.[19]

3.7 Total effects

In order to fully evaluate the effect of the tax system on the incentives for HGFs and HIE, it is necessary to account for the combined effects of all taxes. Estimating the real size of the marginal tax burden faced by private firms for investment in real capital is a painstaking task, requiring the consideration of effects such as corporate taxation with its specific rules for depreciation and valuation, as well as the taxation of interest income, dividends, capital gains, and wealth. In addition, we need to examine how these tax schedules differ across different types of investors. A correct estimate of the tax burden must take into consideration what type of real capital the firms invest in, how these investments are financed, who the firm's owners and creditors are, and in what industries the investments are made. Estimates have been made for a number of countries using the methodology developed by King and Fullerton (1984). Generally, these studies show large differences of real rates of taxation depending on type of owner and sources of finance, which is likely to have a large impact on incentives for the various actors in the competence bloc.

If taxation is nominal and tax rates are high, the real rate of taxation can easily exceed 100 percent even at moderate inflation rates. On the other hand, this can be largely offset by tax deductions of interest payments, and if certain investments are tax favored, opportunities for tax arbitrage arise.[20]

Let us consider further the investment and supply decisions of economic actors, including whether to acquire and utilize any of the key competencies crucial for HGFs. It is clear from our analyses of the tax system that these choices depend on the complex interplay of a number of tax rates and tax code provisions, and on the incentives for savings in general, especially in forms amenable to equity financing.

Tax systems typically contain many asymmetries that give rise to distortions concerning for instance ownership and firm age, which tend to have a negative effect on the functioning of competence blocs and the ability to generate HGFs. There exist innumerable combinations of tax rates and tax provisions, resulting in different blends of ownership structure, financing

[19] It is noteworthy that the U.S. changed the tax code in the early 1980s along these lines, paving the way for a wave of entrepreneurial ventures in Silicon Valley and elsewhere (Misher 1984; Gompers and Lerner 2001).
[20] Fukao and Hanazaki (1987) provide systematic evidence of such effects for OECD countries in the 1970s and 1980s.

structure, industry structure, size distribution of firms and employment dynamics across countries.

Let us consider the venture capital (VC) industry as an example. As explained in Section 2, venture capitalists (VC) often fulfill a crucial role in the development of a small entrepreneurial high-growth venture by converting high-risk opportunities to a more acceptable risk level through portfolio diversification, and by adding key competencies that the firm may be lacking. This is achieved by means of developing arrangements that align the incentives of the three actors—investors, venture capitalists and entrepreneurial start-ups (Zider 1998; Gompers and Lerner 2001). The extent to which this is possible is also largely governed by the tax code for stock options and capital gains, and whether pension funds are allowed to invest in high-risk securities issued by small or new companies and venture capital funds.

The tax systems of many countries evolved before complicated ownership structures involving VC/PE financing even existed.[21] Sophisticated mechanisms have been needed to provide high-powered incentives for a number of actors in addition to the final equity holders. In fact, the modern VC industry in the United States could not have evolved until the tax system was changed in key respects: new legislation in 1979 allowing pension funds to invest in high-risk securities issued by small or new companies and venture capital funds, sharp reductions in the capital gains tax, and stock option legislation of 1981 making it possible to defer tax liability to when the stocks are sold rather than when the options are exercised (Fenn et al. 1995).

Even seemingly neutral taxation may give rise to distortions if some actors and firms are financially constrained, notably small firms. These examples include corporate taxation, taxation on savings and taxation on private wealth; small, young firms rely on retained earnings and private equity to a larger extent. Likewise, the regulatory tax burden is likely to fall more heavily on small and young firms (and hence on potential HGFs), since accompanying administrative costs have a large fixed component that is unrelated to the size of the firm. This is recognized in a number of countries which identify the regulatory burden itself as an impediment to economic development, in particular for young and small firms (see, e.g., European Commission 2007).

Three conclusions can be drawn from our analysis of the effect of the tax system on incentives for HIE and HGFs:

[21] VC and PE involves several layers of ownership: private ownership stake by founders and key personnel, ownership share by VC/PE firm, ownership stake by VC/PE partners (often indirect), investor stake in the VC/PE fund and final beneficiaries of institutions investing in VC/PE funds.

(i) The tax system is likely to have far-reaching effects.

(ii) In order to identify the incentive effects for the key actors in the competence bloc, the tax code has to be examined at a detailed level. Hence, cross-country studies that try to explain differences in industry structure, size distribution of firms, prevalence of HGFs and the like by using raw tax rates or other aggregate tax-system indicators as regressors may be misleading.

(iii) A number of common features of tax systems lead to large distortions, disfavoring infant HGFs and thereby the effectiveness of HIE.

4 Labor market policy and high-impact entrepreneurship

Job creation and destruction flows are large and persistent—10 to 15 percent of all jobs in the private sector are destroyed each year (Davis and Haltiwanger 1999). The overwhelming share of these job flows takes place within narrowly defined sectors of the economy. According to a variety of studies, only about 10 percent of reallocation reflects shifts of employment opportunities across 4-digit industries. Based on the existing empirical literature, Caballero (2007, p. 24) maintains that more than 50 percent of aggregate productivity growth emanates from reallocation across plants/firms in the same industry, and 20–50 percent can be attributed to the effect of entry and exit in narrowly defined industries. Caballero also shows that the gross flow of workers is higher in firms with high productivity growth. Taken together, these observations point to the importance of experimentation and selection.

Moreover, studies using matched employer-employee data reveal very large churning, or hires and separations in excess of total job creation and destruction (Abowd and Kramarz 1999). In other words, worker flows are much larger than job flows, perhaps as much as twice the volume.

Labor studies document massive ongoing restructuring of jobs and workers across firms. It is reasonable to hypothesize that HGFs and potential HGFs are more in need of flexibility and freedom of contracting in order to realize their high-growth potential. Institutions that hamper the freedom of contracting curtail the possible combinations of factors of production. The large productivity differentials across firms in the same industry indicate that after controlling for skills/competencies, labor productivity can vary dramatically depending on who is the manager/entrepreneur.

We will now examine the impact of labor market institutions on the functioning and efficiency of the competence bloc. We focus on three labor market institutions of particular importance for the economy's ability to promote HIE and thus to generate HGFs:

(i) labor market regulations, especially concerning job security mandates;

(ii) wage-setting institutions; and

(iii) the social insurance system.

4.1 The regulation of labor markets

There are large cross-country differences in the extent of labor market regulations (OECD 1994, 2004, Venn 2009). The empirical findings about churning and restructuring give reason to believe that strict employment security provisions and other regulations that restrict contracting flexibility are more harmful for enterprises that would like to grow rapidly than for mature firms and firms without growth aspirations. As an employer learns about a worker's abilities over time, or as those abilities evolve with the accumulation of experience, the optimal assignment of the worker to various tasks is likely to change. The scope for task reassignment within the firm can be expected to rise with firm size. In an unfettered labor market, optimal task reassignment often involves mobility between firms, and such mobility is more likely when the initial employment relationship involves a small, often young, business.

Strong regulation of the employment and dismissal of employees keeps entrepreneurs from adjusting their workforce in correspondence with market fluctuations, thereby increasing risk in potential HIE and HGFs (Audretsch et al. 2002, p. 47). Moreover, both the rate at which workers separate from jobs and the rate at which employers destroy job positions decline with the size, age and capital intensity of the employer (Davis and Haltiwanger 1999; Bartelsman et al. 2004). Hence, a low level of labor market regulations increases the flexibility of high-risk entrepreneurial companies, making the evolution of new companies into HIE and HGFs more likely. *Figure 2* illustrates this tradeoff by depicting the relationship between the strictness of employment protection and the rate of high-growth expectation early-stage entrepreneurship, i.e., new firms and firm owners with a willingness and potential for high growth (Bosma and Levie 2010).[22] The figure clearly shows that stricter employment protection is associated with a lower share of this form of entrepreneurship.[23]

[22] Permission to use this figure and data from the *GEM 2009 Global Report* has been kindly granted by the copyright holders. Our thanks go to the authors, national teams, researchers, funding bodies and other contributors who have made this possible.

[23] Of course, the figure only shows a correlation between the two variables. For a multivariable regression analysis producing the same result, see Bosma (2009). Another interesting result in that study is that employment

Figure 2 about here

Furthermore, the relative advantage of being an employee decreases with weak employment protection legislation, making it more favorable to undertake entrepreneurial projects as self-employed (van Stel et al. 2007). Generous, far-reaching labor protection legislation increases an employee's opportunity cost of changing employers or leaving a secure salaried job to become self-employed. Given that initiatives resulting in HIE and HGFs often require a change of workplace, far-reaching labor protection legislation should be avoided.[24]

If regular employment is highly regulated, strong incentives arise to devise arrangements to circumvent the regulations. In several European countries, new routines of flexibility have emerged. The most important forms include increased self-employment, the emergence of an underground economy in which the government refrains from enforcing regulations, and increased reliance on temporary employment.[25]

For the self-employed, compensation and working hours are totally unregulated and no labor security is mandated.[26] Román et al. (2009) find that transitions from paid employment to "dependent" self-employment—when a former employee acts as a sub-contractor to a previous employer—increases with stricter protection. The share of the work force on temporary contracts and employment in staffing service firms is also on the rise virtually everywhere in Europe (Kahn 2009).[27] Trevisan (2008) exploits the fact that the level of employment protection is differentiated by firm size in Italy. She finds that firms close to the threshold size (15 employees) are more likely to rely on temporary employment when expanding. For obvious reasons, staff on temporary contracts are less motivated to invest in firm-specific skills and commit as strongly to the firm as employees on permanent contracts. Thus, it becomes less likely that the firm will be able to attract workers who have or are inclined to develop highly valued skills.

Also, very small firms may be able to avoid unionization and the signing of collective agreements, and therefore benefit from greater freedom of contracting. This room for maneu-

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protection has no effect on entrepreneurs with low-growth ambitions. This clearly shows how the institutional setup can influence different forms of entrepreneurship in different ways.

[24] Worker mobility seems to be an important factor spurring successful entrepreneurship and knowledge spillover in highly innovative and rapidly growing areas such as Silicon Valley (Saxenian 1994).

[25] See Skedinger (2010) for an overview.

[26] This is probably one of the reasons why the empirical evidence on the relationship between the degree of employment protection and the level of self-employment is mixed. See Skedinger (2010) and Parker (2009, pp. 450–451) for a survey of empirical studies.

[27] Here it is worth noting that the share of employment in temporary work agencies is higher in the United States with stricter employment protection legislation (Autor 2003).

vering would likely disappear once the firm size exceeds a certain threshold, thus increasing the cost of expansion.[28]

This is yet another factor likely to hamper the entrepreneurial spirit and willingness to grow among new and small enterprises. These evasive measures do little to help HGFs. Instead, they tend to create a system in which a large share of economic activity occurs in small firms lacking the ability or the ambition to become HGFs. Onerous regulation makes it difficult and risky to build large companies. Thus, a certain entrepreneurial effort is less likely to be(come) high-impact in this case.

4.2 Wage-setting institutions

Wage-setting institutions may impact the functioning of the competence bloc and the conditions for potential HGFs through several channels. In particular, the wage compression associated with centralized wage bargaining often puts smaller and younger businesses at a disadvantage, particularly in services (i.e., the most likely potential HGFs[29]). Wages are consistently higher at larger employers, even after exhaustive efforts to control for observable worker characteristics and other job attributes (Oi and Idson 1999).

Also, old firms pay higher wages on average than new firms; industries in the low-end of the wage distribution are found in services, not in manufacturing.[30] Centralized wage-setting institutions disadvantage potential HGFs by implementing standard rate compensation policies that closely tie wages to easily observed job and worker characteristics such as occupation, education, experience and seniority.[31] In developed countries, employees' general income level is also relatively high, which in turn makes the opportunity cost of leaving salaried employment to start or work in new potential HGFs high as well (Ho and Wong 2007).

Given the large intra-firm differences in productivity and productivity growth, wages set in negotiations away from the workplace that do not take idiosyncratic factors into account will impair the functioning of the competence bloc for HGFs. Intra-firm differences are especially large in young and rapidly expanding industries and firms (Caballero 2007), which further underlines the potential negative effect on HGFs and HIE.

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[28] These opposing effects are also consistent with the findings of no relationship between the rate of self-employment and the degree of regulation of labor markets in rich countries (Robson 2003; Torrini 2005).
[29] See Henrekson and Johansson (2010).
[30] Garen (1985) and Kremer (1993) develop theoretical models that explain the systematic sorting of more productive workers to larger employers as an efficiency-enhancing outcome in economies with heterogeneous, imperfectly substitutable labor.
[31] Freeman (1998), Blanchflower and Freeman (1992), and Blau and Kahn (1996) provide evidence that unions and other centralized wage-setting institutions compress wages among observationally similar workers by promoting standard rate compensation policies.

4.3 Labor markets and the social insurance system

By providing insurance for unfavorable outcomes, an extensive and generous public social insurance system can in principle encourage individuals to pursue entrepreneurial endeavors. This is a valid theoretical point shown formally by Sinn (1996), but it is an open question whether it is important empirically. To our knowledge, this hypothesis has yet to be tested empirically. At first sight, it seems clear that a generous welfare system should make it less costly to bear uncertainty as an entrepreneur or to move to a risky job in an entrepreneurial firm. In labor markets where job security is closely linked to job tenure, this may no longer hold; what matters is the opportunity cost, or how much an employee has to give up in terms of income security if (s)he transfers to self-employment or a risky job in an entrepreneurial firm. For a tenured employee with a low-risk employer, the opportunity cost rises considerably in many OECD countries.

In many countries important benefits are tied to employment, such as health insurance in the U.S., for example. Many workers and potential entrepreneurs get "trapped" in large companies that provide generous health insurance for the employee and his/her family. Decoupling health insurance from employment would increase labor flexibility and reduce fears of loosing adequate health insurance and other important benefits that may be tied to employment. In Denmark, generous welfare systems are combined with weak job security mandates, sometimes called "flexicurity" (Andersen 2005).

Furthermore, the manner in which savings are channeled to various investment activities influences the type of business organization that can obtain credit. Pension funds are less likely to channel funds to entrepreneurs than business angels or venture capital firms. Hence, the composition of national savings is not neutral in its impact on entrepreneurship and small business development. If the government forces individuals to keep a large part of their savings in a national pension fund system, small business credit availability will suffer relative to an alternative policy and institutional arrangements that allow for greater choice by individuals regarding their savings and investments.

A final point concerns the design of the supplementary pension system. Supplementary pension plans that are not fully actuarial and individualized contain elements of redistribution and risk-sharing across individuals in a group, like white-collar workers in a certain industry, for example. The pension benefit level may be disproportionately tied to the wage level achieved at the end of the professional career. To the extent that this is true, the mobility of

(older) workers across firms is greatly discouraged, as well as the hiring of elderly unemployed.

4.4 Summary of the effects of labor market regulations

The degree of regulation and design of labor markets, wage-setting and social insurance systems influences incentives for potential HGFs and existing HGFs by restricting the freedom of contracting and thereby curtailing the possible combinations of factors of production. The need for experimentation in order to find more efficient factor combinations is likely to be large in new firms and industries, especially in current HGFs or potential HGFs. As a result, less mileage will be obtained from a certain entrepreneurial effort, ultimately making it less likely that the effort will become HIE when constrained by strict labor market regulations.

The most important channel by which labor market institutions affect HGFs and HIE is by hampering the supply of skilled workers to firms undergoing expansion and/or change. Given the large worker flows required in a dynamic economy, it is harder to recruit workers with the competencies needed. The opportunity cost of leaving a tenured position goes up for the employees while the fixed cost of hiring increases as well when a bad recruitment becomes more costly to reverse; there may be threshold effects that make firms hesitant to expand beyond a certain size, and a great deal of entrepreneurial effort may need to be expended on evasive rather than directly productive activities.

If temporary contracts are used systematically in order to circumvent regulations tied to permanent employment, industries and business ideas that depend on high-skilled labor and on-the-job learning are disadvantaged. Legal and institutional hurdles that prevent firms from laying off workers who underperform discourage potential HGFs and HIE from expanding. Depending on how labor markets are regulated and how these regulations interact with the social insurance system, the opportunity cost of becoming self-employed or starting a new business is affected. When social security benefits are closely tied to tenured positions and the employee has tenure at a low-risk employer the opportunity cost increases heavily.

5 Conclusion

The successful commercialization of an innovation requires a chain of agents that work together in order to develop a high-impact firm. The high degree of complexity in production combined with the specificity of human capital makes successful interaction within the competence bloc difficult but also highly rewarding when successful. Entrepreneurship is argua-

bly the most important. Most potential high-growth firms (HGFs) fail, but the few that succeed account for a substantial part of growth and development. In this article we have examined how tax and labor market policies should be designed in order to foster a favorable environment for high-impact entrepreneurship (HIE).

Bringing together the specialized, non-transferable competencies of different actors into a well-functioning whole is invariably difficult, even with favorable institutions and public policies. Favorable economic institutions are of particular importance for the emergence of HGFs, both because of the sensitivity of competencies to good institutions and because of the high social return in terms of growth and job creation.

The institutional framework set by public policy affects the prevalence and performance of both productive entrepreneurship and high-impact entrepreneurship. The institutional framework will also have different effects on HGFs compared to the majority of firms with no growth ambitions.

Rapid firm growth is a complex process requiring a number of different but complementary competencies, and it is clear that studies with a narrow focus on a single aspect are likely to be misleading. Our analysis also emphasizes the complementary character of institutions. Lower taxes on entrepreneurial activities may have less effect than expected if high taxes on skilled labor give rise to bottlenecks in production or if key areas remain closed for entrepreneurial exploitation.

Our analysis is confined to highly developed countries with basic institutions in place, such as secure property rights and the rule of law. Applying the theory of competence blocs, we have emphasized two bundles of institutions which are particularly important for the generation and growth of HIE and HGFs: the tax system and the organization and regulation of labor markets. Key agents interact in complex ways; details in the tax system are likely to be of great importance for the incentives and the outcome of their activities. *Table 2* summarizes the results of our study and shows the policies that provide a favorable environment nurturing competence blocs and high-impact entrepreneurship.

Table 2 about here

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Table 1 Different Types of Taxes with an Impact on the Actors in the Competence Bloc.

Taxation of earned income and pay-roll taxes
– level and degree of progressivity
– social security contributions

Taxation of capital income
– level and degree of progressivity
– dividends vs. interest income
– exemptions
– differences across assets
– differences across types of owner
– differences based on holding period
– differences across instruments
– preferential treatment of pension savings

Taxation on asset holdings
– wealth tax
– property tax
– inheritance tax
– exemptions

Corporate taxation
– level and degree of progressivity
– statutory rate/effective rate
– accounting measures to lower effective taxation
– single- or multilevel taxation
– degree of symmetry in the tax treatment of business profits and losses
  – against other types of income
  – against future profits
  – effect of progressivity
– treatment of holding companies
  – domestic/foreign

Taxation of stock options
– capital or labor income
– tax on realized or imputed gain
– differences based on holding period

Sales tax/VAT
– level
– degree of uniformity
– exemptions

Note: For all types of taxes it matters whether nominal or real incomes are taxed.

Table 2 Policies Favoring High-impact Entrepreneurship in the Areas of Taxation and Labor Markets.

Personal tax on earned income and marginal tax rate on earned income	Low
Personal tax on capital income	Low
Tax on stock options	Low
Degree of tax neutrality across owner categories	High
Degree of neutrality across sources of finance	High
Personal taxation of asset holdings and taxation of wealth	No, or exemption for equity holdings
Corporate tax rate	Low statutory rate, low effective rate, and neutral across types of firms and industries
Symmetric tax treatment of profit and losses	Yes
Labor security mandates	Portability of tenure rights
Design of pension plans	Fully actuarial
Wage-setting arrangements	Decentralized and individualized
Government role in income insurance	Provide flexicurity

Figure 1 The Competence Bloc and the Fostering of HGFs.

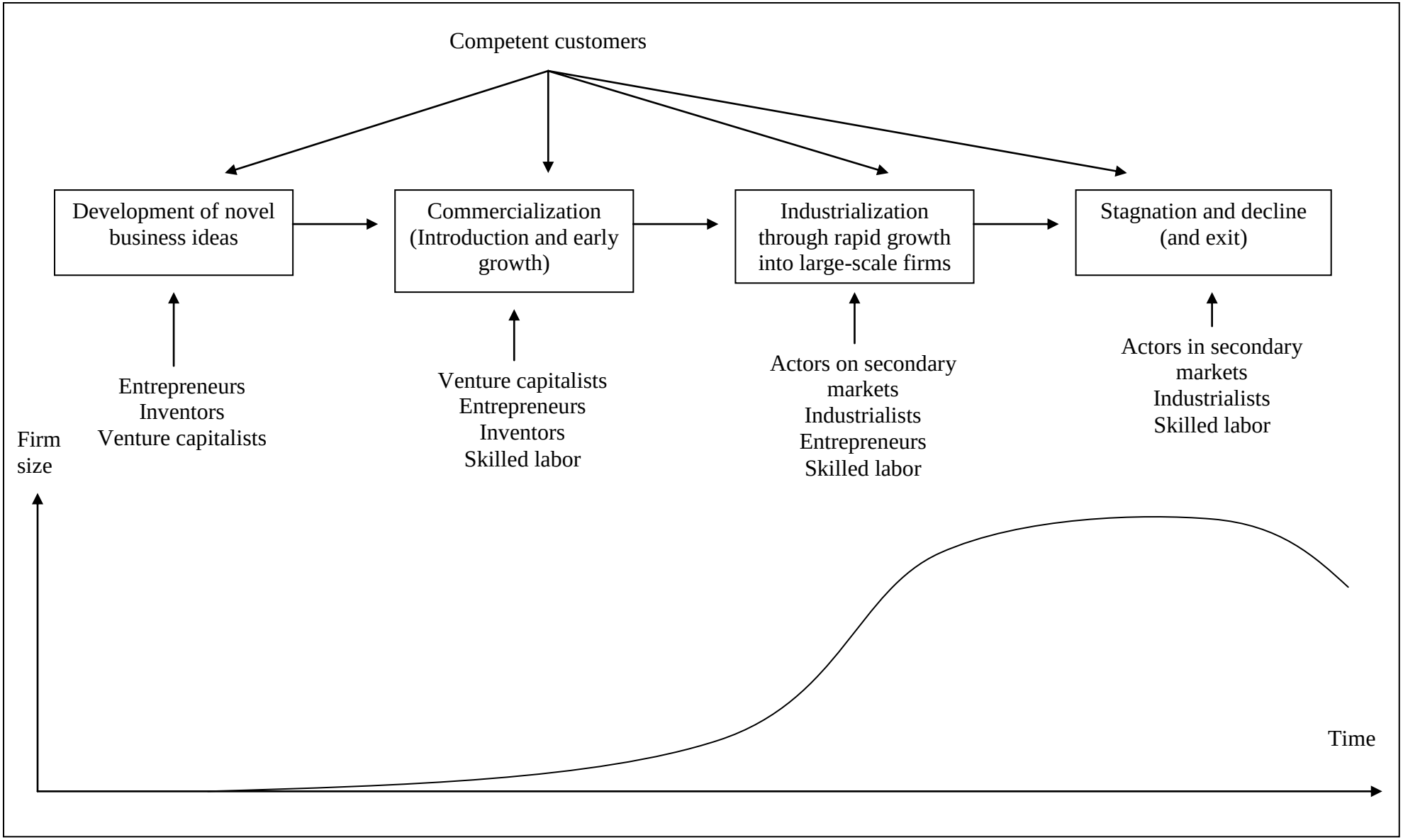
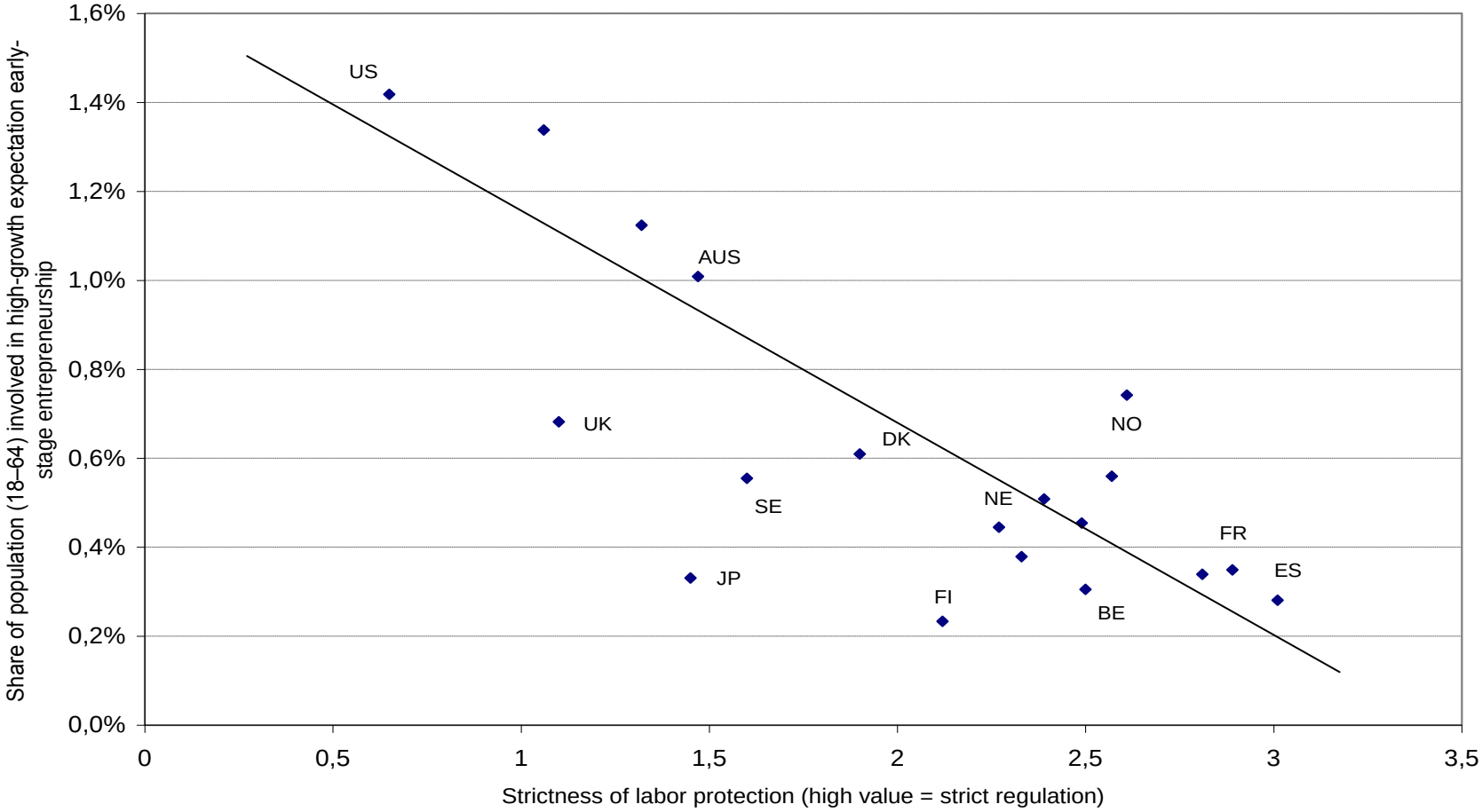


Figure 2 Strictness of Labor Protection and High-Growth Expectation Early-Stage Entrepreneurship



Note: Employment protection refers to the 2004 OECD index (version 2), high-growth expectation early-stage entrepreneurship is the average over the 2004–2009 period according to the Gobal Entrepreneurship Monitor (GEM). $R^2 = 0.57$.
Source: Bosma and Levie (2010).